Supreme Court, U. S.
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# IN THE SUPREME COURT OF THE UNITED STATES

**OCTOBER TERM, 1978**

NO. 78-1304

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AMERICAN SEATING COMPANY,
Petitioner,
v.
NATIONAL SEATING COMPANY
Respondent.

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**PETITIONER'S EXPANDED APPENDIX**

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PRICE, HENEVELD, HUIZENGA & COOPER
Attorneys for Petitioner
By: Lloyd A. Heneveld
BUSINESS ADDRESS:
P. O. Box 2567
Grand Rapids, Michigan 49501

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In the

# United States Court of Appeals

For the Seventh Circuit

No. 77-1872

REPUBLIC INDUSTRIES, INC.,

*Plaintiff-Appellant,*

v.

SCHLAGE LOCK COMPANY,

*Defendant-Appellee.*

Appeal from the United States District Court for the Southern District of Illinois, Peoria Division.
No. P Civ-76-17—Robert D. Morgan, *Judge.*

ARGUED JUNE 5, 1978—DECIDED FEBRUARY 1, 1979

Before SWYGERT, CUMMINGS, and PELL, *Circuit Judges.*

SWYGERT, *Circuit Judge.* Republic Industries, Inc., assignee and owner of the Slaybaugh patent, U.S. Patent No. 3,852,845, instituted this infringement action against Schlage Lock Company. Schlage counterclaimed, alleging invalidity of the patent and non-infringement. Without reaching the infringement issue, the district court in a thorough opinion held the Slaybaugh patent invalid for obviousness under 35 U.S.C. § 103 and entered judgment for defendant. *Republic Industries, Inc. v. Schlage Lock Co.*, 433 F. Supp. 656 (S.D. Ill. 1977). We affirm.

This appeal presents a recurrent problem: the proper criteria by which a combination patent is measured for nonobviousness. Increasingly, the districts courts in this circuit, not without some confusion emanating from this court, have taken the view that synergism and not the criteria articulated in *Graham v. John Deere Co.*, 383 U.S. 1 (1966), is the controlling test in combination patent claims.[1] Before addressing this question, we review the claims of the patent involved in this appeal.

I

The Slaybaugh patent comprises nine claims. Claims 1 through 7 of that patent were not placed in suit by Republic; only claims 8 and 9 are alleged to be infringed. Since Republic concedes that the validity of claim 9 is dependent upon the validity of claim 8, only the latter claim will be discussed.[2]

[1] *See, e.g., A. U. Dunmore Manufacturing Co. v. International Components Corp.* (No. 76 C 2131 (N.D. Ill., June 8, 1978); *Harag Products, Inc. v. K. O. Lee Co.*, 195 U.S.P.Q. 292 (N.D. Ill. 1977); *Saccharin v. Ace Patents Corporation*, 435 F. Supp. 298 (S.D. Ind. 1977); *Republic Industries, Inc. v. Schlage Lock Co.*, 433 F. Supp. 656 (S.D. Ill. 1977).

[2] Claim 9 simply provides: "The combination of claim 8 wherein said means for resiliently holding said valve are electrically operated."

The invention of Slaybaugh's claim 8 is a door closer used to hold open and to close fire doors in hospitals, institutional health care facilities, and other public buildings. Republic argues that the Slaybaugh device achieves a unique combination of two functions in a single unit: (1) multiple-point hold-open, whereby a door can be held open at any point along the arc between its closed and fully opened positions; and (2) momentary manual release, whereby a door in any open position becomes self-closing when a person momentarily pushes or pulls the door.[3] The Slaybaugh patent was the first device in the history of door closers which combined these two features.

As illustrated by the schematic diagram below, claim 8 of the Slaybaugh device is essentially comprised of seven elements, each of which Republic concedes to be old and known:[4]

(1) a door-closing main spring;

(2) a piston geared to the door and sliding within an enclosed cylinder, which is activated by the main spring;

(3) hydraulic fluid[5] in the cylinder ahead of (in the diagram, to the right side of) the piston;

(4) a fluid escape passage to the right of the piston;

(5) a dual area valve[6] which closes the fluid escape passage;

[3] The momentary manual release feature thereby differs from manual release in that the latter is not self-closing, requiring manual force to close the door completely. Although the manual release feature is often connected to an electric control circuit such as a smoke detector which, when activated, will close the door, the unique aspect of the momentary manual release feature Republic argues, is that the doors can be closed quickly and easily regardless of smoke detector operation, *e.g.*, when a detector might fail to operate.

[4] Claim 8 claims as invention

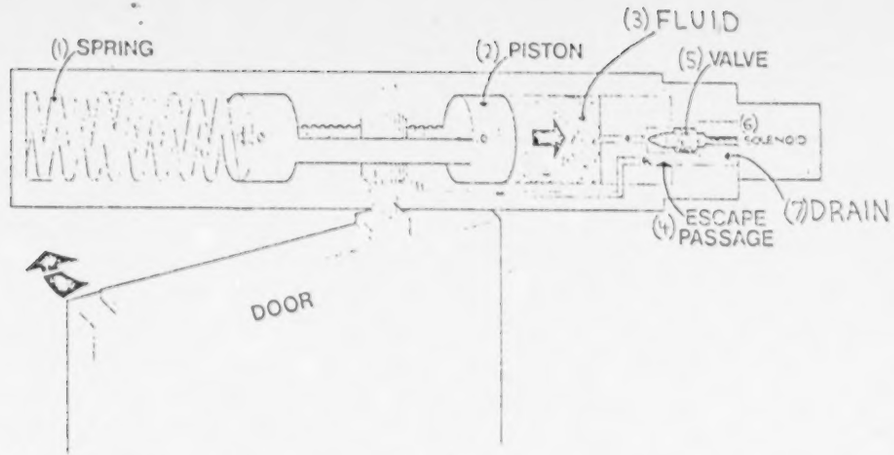
> A combined door check and door hold open device including resilient means for urging a door to and closing upon expansion thereof, means defining a hydraulic cylinder, a piston therein connected to move toward one end of said cylinder with the expansion of said resilient means, said resilient means establishing a pressure per unit area on fluid ahead of said piston, means associated with said one end of said cylinder defining a passage for the escape of fluid from said one end having a valve seat therein, a valve adapted to close against said valve seat from the downstream side thereof, said valve having a face larger than said valve seat, a valve chamber downstream of said seat, a portion of said valve downstream of said face closely contained in said chamber to substantially prevent fluid flow past said valve and allow a pressure drop across said valve when said valve is open, means providing a fluid escape passage into said valve chamber upstream of said valve face at any position of said valve, means providing a fluid escape passage from said valve chamber behind said closely contained portion of said valve when in said open position and means adapted to hold said valve resiliently against said seat with a force in excess of the product of said pressure and said valve seat area and less than the product of said pressure and said face area.

[5] Hydraulic fluid in a door closer is the liquid, typically oil, which flows within the door closer cylinder to provide door opening and closing speed control as well as to provide lubrication for the moving mechanical parts of the unit.

[6] A valve is a device in a passage that regulates fluid flow by opening or blocking the passage with a movable member. A dual area valve functions the same way, except that the valve has two faces, each a different size.








(6) a solenoid[7] which, by exerting a force on the valve, maintains the valve in a closed position overcoming the opposing force of the door-closing spring; and

(7) a drain behind the dual area valve to insure free valve movement, since accumulation of fluid behind the valve would block or interfere with valve movement.

In its commercial embodiment, Republic's unit, called *Fire Exc II MR*, is completely encapsulated.

As the door is opened to any desired position (the multiple-point hold-open feature), a gear mechanism attached to the door causes the piston in the diagram to move to the left, thereby compressing the closing spring. The electrically controlled solenoid exerts a force on the valve to close off the fluid escape passage, thus preventing the fluid interposed between the piston and valve from escaping. Even though the closing spring is urging the piston toward the right, movement of the piston is blocked because fluid cannot escape from its chamber through the fluid escape passage when the valve is closed. The door remains open as long as the equilibrium between the opposing forces of the spring and solenoid is maintained.

An open door may be closed either automatically or manually. The door is closed automatically by deactivation of the solenoid. The solenoid is connected to an external circuit which usually includes smoke or fire detectors. When the circuit is opened, *e.g.*, by the triggering of the smoke detector, the solenoid releases the force on the valve, thereby unseating it. Once the valve is open, the closing spring forces the piston rightward. The piston in turn forces the hydraulic fluid interposed between the piston and the valve[8] past the valve through the escape passage. The gear mechanism attached to the piston swings the door toward closure.

The allegedly unique feature of the Slaybaugh patent is the momentary manual release. Unlike prior door closers which required manual assistance,[9] the Slaybaugh device requires only a brief pull or push on the door, whereby the door closes by itself. The force of the momentary pull together with the force of the closing spring are sufficient to overcome the solenoid's effect and unseat the valve, which, when open, allows the door to close by itself.

II

Schlage contends that the Slaybaugh device is invalid because it is merely a combination of old elements having no synergistic effect. It takes this position regardless of whether a synergism test is defined in terms of a combination that produces an unexpected, unpredictable, or surprising result or in terms of individual elements of a combination functioning in a new and different manner. Although it is unclear whether Schlage understands synergism to be a substitute for or an addition to the statutory requirement of nonobviousness as interpreted in *Graham v. John Deere Co.*, 383 U.S. 1 (1966), it nonetheless argues that synergism is required by the *Anderson's Black Rock v. Pavement Co.*, 396 U.S. 57 (1969), and *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273 (1976), decisions. A review of these cases, particularly when placed in historical context, demonstrates otherwise.

The Patent Act of 1793 required that a device had to be both new and useful to be patentable. Act of February 21, 1793, ch. XI, § 1, 1 Stat. 318. Thereafter a third criterion was judicially created: a device had to be an "invention" as well.[10] Defining "invention" proved to be elusive. Nearly a century ago the Supreme Court said as much about the term:

> The truth is the word cannot be defined in such manner as to afford any substantial aid in determining whether a particular device involves an exercise of the inventive faculty or not. In a given case we may be able to say that there is present invention of a very high order. In another we see that there is lacking that impalpable something which distinguishes invention from simple mechanical skill. Courts adopting fixed principles as a guide, have by a process of exclusion determined that certain variations in old devices do or do not involve invention; but whether the variation relied upon in a particular case is anything more than ordinary mechanical skill is a question which cannot be answered by applying the test of any general definition.

*McClain v. Ortmayer*, 141 U.S. 419, 427 (1891). The imprecision of the "invention" standard resulted in an

[7] A solenoid is a device which uses electrical energy to create a magnetic field in a coil so that a movable core is drawn into the coil when a current flows. Here the solenoid is attached to the dual area valve.

[8] In the case of manual operation, the force of the manual pull on the door, transmitted through the gear mechanism, supplements the pre-existing force of the closing spring. The combined resultant force moves the piston rightward. This piston movement generates sufficiently high pressure in the fluid chamber to the right of the piston to overcome the force of the solenoid and unseat the valve.

[9] It is generally recognized that *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248 (1851) is the earliest statement of the requirement of "invention."

inconsistent and unpredictable body of law because it required that the decision of patentability be based ultimately upon the subjective whims of the reviewing court.[11]

Congress revised the patent laws in 1952.[12] The novelty and utility requirements were maintained and recodified 35 U.S.C. §§ 101, 102. The retention of these requirements did not, however, completely define the concept of patentability; missing was that essential quality which goes beyond mere newness or usefulness—the "something" that the courts had unsuccessfully strived for by the use of the term "invention." In order to start afresh in a semantic sense and to promote uniformity in the application of the patent laws, Congress added section 103.[13] That provision replaced the judicially imposed requirement of "invention" with that of "nonobviousness":[14]

> A patent may not be obtained . . . if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

35 U.S.C. § 103.

Section 103 received its definitive interpretation in *Graham v. John Deere Co.*, 383 U.S. 1 (1956). There, the Court, in calling for "strict observance" of its requirements, laid out the analysis to be followed in cases involving the obviousness standard:

> While the ultimate question of patent validity is one of law [citation omitted], the § 103 condition, which is but one of three conditions, each of which must be satisfied, lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved.

*Id.* at 17. It is against this backdrop that *Black Rock* and *Sakraida* must be read.

*Black Rock* involved a combination patent in which each of the elements were known in the prior art.[15] In that case the Court rested that it would adhere to the guidelines it had developed in *Graham*. 396 U.S. at 61-63. Using such analysis, the Court held the patent at issue invalid because "the combination was reasonably obvious to one with ordinary skill in the art." *Id.* at 60. Although during the course of its discussion the Court noted that a combination "may result" in a synergistic effect,[16] the Court went on to hold that the device in question "was not an invention by the obvious-nonobvious standard," *id.* at 63; this phrase could only refer to *Graham* and section 103.

Similarly in *Sakraida*, the Court scrutinized the combination patent in issue by considering the scope and content of the prior art together with the differences between that art and the claimed invention.[17] In holding the patent invalid, the Court held: "[T]his particular use of the assembly of old elements would be obvious to any person skilled in the art of mechanical application." 425 U.S. at 282. Although the Court again discussed synergism, it is apparent from the context of the opinion that the Supreme Court raised the topic only in response to the court of appeals' assertion that synergism was present; the Court simply did not agree that the effect produced by the claimed invention in that case was synergistic.[18]

Neither *Sakraida* nor *Black Rock* can be cited as prescribing some other, special test for the evaluation of combination claims. Nowhere in these two decisions did the Court hold a synergistic effect to be a necessary condition of patentability; nor did it hold that synergism supersedes a finding of nonobviousness under the *Graham* analysis. To the contrary, each case quoted *Graham* with approval. Each turned on whether the claimed invention was nonobvious on the basis of the three-pronged test in *Graham*. In short, we believe that *Sakraida* and *Black Rock*, rather than establishing an additional, different, or substituted test for nonobviousness under section 103, reaffirmed the continuing vitality of *Graham*.[19]

The district court, while agreeing that *Black Rock* and *Sakraida* did not establish synergism as a requisite to patentability, nonetheless interpreted cases from this court as requiring that every combination invention must have a synergistic effect to be patentable.

The synergism test necessarily involves a two-pronged hypothesis: (1) the subject matter of the patent claim comprises a combination of several elements, each of which are known in the prior pertinent art, and (2) the combination is synergistic or at least produces a synergistic "effect." One premise of this hypothesis, at least as applied to mechanical or hydraulic devices, is that all such inventions are merely new applications of known elements and materials in different combinations. As Judge Learned Hand observed:

> It is idle to say that combinations of old elements cannot be inventions; substantially every invention is for such a "combination" that is to say, it consists of former elements in a new assemblage.

*Reiner v. I. Leon Co.*, 285 F.2d 501, 503 (2d Cir. 1960), *cert. denied*, 366 U.S. 929 (1961).[20] If this be true (and if new nonobvious combinations are not patentable), then almost nothing would be patentable. *See Reeves Instrument Corp. v. Beckman Instruments, Inc.*, 444 F.2d 263, 270 (9th Cir.), *cert. denied*, 404 U.S. 951 (1971).

Once it has been determined that all of the elements in the combination are known, the next inquiry under the synergism approach is whether the claimed patent is synergistic or produces a synergistic effect. This has been no easy task. Courts have long wrestled with the meaning of synergism and have formulated a number of definitions. The two most common have been that one of the elements functions differently in combination than it did previously (*e.g., Barbour v. Trippe Manufacturing Co.*, 543 F.2d 588, 592 (7th Cir. 1976), and that the combination results in an effect greater than the sum of the several parts taken separately (*e.g., St. Regis Paper Co. v. Bemis Co.*, 549 F.2d 833, 838 (7th Cir.), *cert. denied*, 431 U.S. 933 (1977)).[21] A realistic appraisal of these formulations, however, reveals that synergism is only a figure of speech, for in its literal sense synergism never has existed and never can exist in mechanical or hydraulic inventions when the term is defined as a whole result greater than the sum of its constituent parts.[22]

There is, in fact, no such thing as a mechanical or hydraulic element functioning differently in combination than it did outside the combination. A spring or valve will always function as a spring or valve, alone or in concert with other components.[23] Moreover, mechanical elements can do no more than contribute to the combination the mechanical functions of which they are inherently capable. *See Application of Mounoglo*, 323 F.2d 1011, 1015 (C.C.P.A. 1963). Thus, the overall performance of the combination is always equal to the sum of the functions of the individual components. As Judge William Conner of the Southern District of New York observed: "In the real world, 2 and 2 never equals five." *Some Hurtful Errors in Reasoning as to Patents*, 5 Am. Pat. L.Q.J. 77, 85 (1977). *Compare Gen. Am. Transp. Co. v. Sup-Seam Int'l Corp.*, 239 U.S. 117, 132 (1960) ("Two and two have been added together and they still make only four.").

A definition of synergism that reflects its etymon is that the elements in the combination must cooperate or interact with each other.[24] So defined, synergism distinguishes those inventions in which the parts are merely aggregated,[25] and those in which the parts coact with each other so that the result comes from the combined effort of the several parts and not simply from the separate action of each. Under this formulation, the presence or absence of synergism, as above defined, proves little. Today, almost all mechanical devices consist of parts which interact with each other. This interaction has little, if anything, to do with the required nonobviousness of the claimed invention. Although the absence of interaction may demonstrate the obviousness of the combination, the presence of interaction assuredly does not impart nonobviousness to a device clearly suggested by the prior art. As defined, synergism simply has no bearing on the ultimate question with which to measure patentability.

Putting the definitional aspects aside, there are more fundamental flaws in the use of synergism as a standard for patentability. In enacting section 103, Congress expressly mandated nonobviousness, not synergism, as the sole test for the patentability of novel and useful inventions. Indeed, synergism is not even mentioned in the Patent Act of 1952. Moreover, as section 103 applies to all patent claims, there is no justification why patentability of a combination patent should be measured by a different standard than any other type of invention.

More importantly, when using the synergism approach to determine whether one element functions differently or whether the whole somehow exceeds the parts, one is required to look solely to the operation of the elements after they are combined. This analysis suffers from two defects. First, a test which looks exclusively to the functioning of the individual elements after they are combined must necessarily be premised on the assumption that it is always obvious to take known elements and combine them. We find this assumption unsound and not based in fact. It may be that in certain circumstances the very choice of the elements to be selected is not obvious. Again, as Judge Hand noted:

> All machines are made up of the same elements: rod, pawl, pitman, journal, bearing, gears, cams, and the like; all actuate their parts in the same ways and always must. All combinations are made of the same substances, retaining their usual chemical properties. But the elements are capable of an infinity of permutations and the selection of that group which produces even possibly a new tool may require a high degree of originality. *It is not all of selection which is the creative act.*

*B.G. Corp. v. Walker Bold. & Co.*, 29 F.2d 1, 2 (2d Cir. 1928), *quoted with approval in Application of Mounoglo*, 323 F.2d 1011, 1015 (C.C.P.A. 1963).

The second and more basic defect with synergism is that section 103 sets as the standard of patentability the nonobviousness of the invention "as a whole" in the mix-

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[11] In this regard, Judge Rich, one of the coauthors of section 103, stated:

> In the final analysis, all it amounted to was that if the court thought the invention, though new and useful, was not patentable then it did not involve "invention" and vice-versa. The requirement for "invention" was the plaything of the judges who, as they became initiated into its mysteries, delighted to devise and expound their own ideas of what it meant; some very lovely prose resulting. *Principles of Patentability*, 28 Geo. Wash. L. Rev. 393, 401 (1960).

[12] Patent Act of 1952, ch. 950, 66 Stat. 798, *codified in* 35 U.S.C. §§ 101 *et seq.*

[13] The Reviser's note to section 103 provides:

> There is no provision corresponding to the first sentence explicitly stated in the present statutes but the refusal of patents by the Patent Office, and the holding of patents invalid by the courts, on the ground of lack of invention or lack of patentable novelty has been followed since at least as early as 1850. This paragraph is added with the view that an explicit statement in the statute may have some stabilizing effect, and also to serve as a basis for the addition at a later time of some criteria which may be worked out.

*See also* H.R. Rep. No. 1923, 82d Cong., 2d Sess. 7 (1952), quoted in *Graham*, *supra*, 383 U.S. at 15.

[14] Under the 1952 Act, the word "invention" was statutorily defined as any "invention or discovery." 35 U.S.C. § 100(a). Thus, an invention which is novel, useful and nonobvious is a patentable invention, a device which is lacking one or more of the criteria is an unpatentable invention.

[15] The claimed invention in *Black Rock* was the placement of a radiant heat burner in a lubricating mixing machine, and an asphalt shaper apparatus in one entirety. All three elements were old in the paving art. The alleged contribution was the combining of these three elements into a single paving machine.

[16] The extent of the Court's discussion of synergism was limited to two sentences. "A combination of elements may result in an effect greater than the sum of the several effects taken together. No such synergistic result is argued here." 396 U.S. at 61.

[17] The patent in *Sakraida*, a device designed to remove animal wastes from a dairy barn, involved the combination of a graded floor, flush troughs, and a means for storing water for a flush effect to clean out the barn floor.

[18] The Fifth Circuit in *Sakraida* had held that the invention in issue "[did] achieve such synergistic result." 474 F.2d 167, 173 (5th Cir. 1973). In this connection, the Supreme Court responded: "We cannot agree that the combination of these old elements . . . can properly be characterized as synergistic . . . ." 425 U.S. at 282. It is thus apparent that the reference to synergism arises not as a statement of an affirmative requirement of patentability, but rather as a rejection of the Fifth Circuit's holding.

[19] We believe our view is supported by the Court's action in *Dann v. Johnston*, 425 U.S. 219 (1976), decided just three weeks before *Sakraida*. In *Dann*, the briefs of the petitioner and one of the amici argued that synergism is essential for patentability and that the patent in issue was not synergistic. *See* Brief of Petitioner at 28; Brief of Amici Curiae for the Computer & Business Equipment Manufacturers Assn. at 9. Importantly, the Court did not discuss nor did it even mention synergism. Instead, the claimed patent in that case was evaluated exclusively under the *Graham* pattern of analysis. 425 U.S. at 226-30.

[20] *See also Safety Car Heating & Lighting Co. v. General Electric Co.*, 155 F.2d 937, 939 (2d Cir. 1946); *Eaton Gearless Coal Co. v. Copland Enterprises Corp.*, 85 F.2d 537, 541 (2d Cir. 1936), *cert. denied*, 300 U.S. 665 (1937).

[21] Other definitions have included the elements must take on a surprising quality, *Gilbreath Manufacturing, Inc. v. Lewis 'N' Spot*, 517 F.2d 1191, 1199 (5th Cir. 1975), the combination must produce a result other than the anticipated sum of the separate parts, *L.A. Industries, Inc. v. Blackmer Corp.*, 353 F.2d 636, 641 (5th Cir. 1965), *cert. denied*, 429 U.S. 870 (1976), the elements must, in the aggregate, produce new, unusual or striking results, *Parchet Corp. v. Borg & Corp.*, 517 F.2d 525, 529 (6th Cir.), *cert. denied*, 423 U.S. 987 (1975), the results must be unachieved by prior art structures, *Bros v. Elkhart Welding & Boiler Works, Inc.*, 441 F.2d 517, 526 (7th Cir. 1971).

[22] At best in one instance, no result is actually greater than the sum of its parts. To the extent that new combinations of elements appear synergistic, it is a function of our imperfect knowledge of the properties of the parts. If one could truly get more out of a combination than was put into it, it would amount to a creation of something out of nothing and would contravene the basic laws of nature as we understand them. If these laws remain valid, the appearance of synergism merely indicates poor grounds for creation, by ignorance or lack of knowledge, to however, but part of the question of obviousness. Thus, at best, the appearance of synergism is subsumed within the question of nonobviousness under section 103 and the *Graham* criteria.

[23] Assuming *arguendo* that there exists an exception, the new function should nevertheless not be seen per se to be a finding of patentability, but merely be taken as evidence to be considered along with other evidence available in the obvious-nonobvious inquiry.

[24] The term synergism derives from the Greek *syn*, together and *ergon*, work, to work together, cooperate. The Oxford English Dictionary, Corrected Impression 1971. *See* Rich, *Laying the Ghost of the "Invention" Requirement*, 1 Am. Pat. L.Q.J. 26, 43-44 (1972).

[25] The classic example of aggregation is matter, lead pencil and rubber eraser. *See Reckendorfer v. Faber*, 92 U.S. 347 (1876).

tion was made to a person having ordinary skill in the art . . . ." This provision therefore compels the court to view the invention from the vantage point of the field of art at a specific point in time, *i.e.*, the time the invention was made. *See* Rich, *Principles of Patentability*, 28 Geo. Wash. L. Rev. 393, 405-06 (1960). From this vantage point the critical question becomes whether the level of skill in the art was such that the combining of the elements in the manner claimed would have been obvious, not in retrospect, but at the time it was done by the inventor. As the Supreme Court stated in *United States v. Adams*, 383 U.S. 39, 50 (1966), a companion case to *Graham*:

> It begs the questions . . . to state merely that magnesium and cuprous chloride were individually known battery components. If such a combination is novel, the issue is whether bringing them together as taught by [the inventor] was obvious in the light of the prior art.

Synergism, however, precludes this analysis. Because synergism centers exclusively on the performance of the elements *after* combination and without regard to the obviousness or nonobviousness of *making the combination*, synergism does not comport with the *Graham* mandate to apply section 103.

Regrettably, we have heretofore failed to provide clear and consistent guidance regarding the standards appropriate for combination patents. Although we have in fact continued, either explicitly or implicitly, to judge patent validity according to the *Graham* analysis, we have also from time to time commented on the presence or absence of a requirement akin to synergism in the claimed invention under review. And in *St. Regis*, we stated our conclusion in such a way that it may seem that we regard synergism as a test separate from and coequal to that for nonobviousness under section 103. Inasmuch as *Graham* and section 103 continued to be the guiding light, the results of those cases were not in error. But as the foregoing discussion makes evident, this court never intended that synergism be applied literally or that synergism is the *sine qua non* of patentability. Rather, the concept was employed only as a figure of speech to express the truism that when all the parts of a claimed invention are known, the combination (and the act of combining) is likely to be more obvious to one reasonably skilled in the art.[5] *See Reeves Instrument Corp. v. Beckman Instruments, Inc.*, 444 F.2d 263, 271 (9th Cir.), *cert. denied*, 404 U.S. 951 (1971). However, because synergism has prevented the development of a consistent, predictable body of law under section 103, and because the concept does not bear any logical *open facto* relationship to obviousness, the term has little, if any, utility. Therefore until Congress shall otherwise legislate or the Supreme Court shall otherwise specifically hold, this court will continue to apply the *Graham* analysis as the exclusive means by which to measure nonobviousness under section 103.

Perhaps a *caveat* is in order by our holding today we have no intention of departing from the high standard of patentability which is reflected in the *Hotchkiss* and *Sakraida* decisions. Though rendered nearly a century apart, the Supreme Court's discussion in *Atlantic Works v. Brady*, 107 U.S. 192, 200 (1883), of the purpose behind the patent laws remains true today:

> The design of the patent laws is to reward those who make some substantial discovery or invention, which adds to our knowledge and makes a step in advance in the useful arts. Such inventors are worthy of all favor. It was never the object of those laws to grant a monopoly for every trifling device, every shadow of a shade of an idea, which would naturally and spontaneously occur to any skilled mechanic or operator in the ordinary progress of manufactures. Such an indiscriminate creation of exclusive privileges tends rather to obstruct than to stimulate invention. It creates a class of speculative schemers who make it their business to watch the advancing wave of improvement, and gather its foam in the form of patented monopolies, which enable them to lay a heavy tax upon the industry of the country, without contributing anything to the real advancement of the arts. It embarrasses the honest pursuit of business with fears and apprehensions of concealed liens and unknown liabilities of lawsuits and vexatious accountings for profits made in good faith.

[5] The Supreme Court has expressed this idea in similar terms: "Courts should scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding [a patentable] invention in an assembly of old elements. . . ." *Great A & P Tea Co. v. Supermarket Corp.*, 340 U.S. 147, 152 (1950); *Accord, Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 281 (1976).

## III

Having thus disposed of the synergism issue, we are left with the question of the instant patent's validity. We begin this analysis by noting that a patent is presumed valid. 35 U.S.C. § 282. That presumption, however, is not conclusive. *St. Regis Paper Co. v. Bemis Co.*, 549 F.2d 833, 838 (7th Cir.), *cert. denied*, 431 U.S. 933 (1977); it merely shifts the burden of proof to the party attacking the validity of the patent. *Mason Pioneer Barrier Co. v. Eclipse Fuel Engineering Co.*, 471 F.2d 308, 312 (7th Cir. 1972), *cert. denied*, 410 U.S. 929 (1973). Furthermore, that presumption does not exist against evidence of prior art not before the Patent Office. *The Allen Group v. NuStar, Inc.*, 575 F.2d 146 (7th Cir. 1978) (per curiam); *Rapat Corp. v. McGraw Edison Co.*, 535 F.2d 378, 383 (7th Cir. 1976). "Evidence prior art reference not considered by the Patent Office can suffice to overthrow the presumption." *Heyer Manufacturing Co. v. Commercial Filters Corp.*, 480 F.2d 1008, 1013 (7th Cir. 1973). Observing these considerations, we now evaluate the Slaybaugh patent to determine whether it is obvious under the *Graham* criteria.

The parties agree, and the district court found, that the Martin patent, U.S. Patent No. 3,626,962, is pertinent prior art relating to the Slaybaugh invention. The Martin patent, also owned by Republic, describes a hydraulic door closer with multiple point holdopen but without momentary manual release. The innovative feature of the Martin device was the introduction of an electrically controlled valve in the escape passage of the hydraulic fluid which, when energized by a solenoid, blocked passage of the fluid, thereby preventing further movement of the piston in the closing direction.[6] Use of the solenoid-operated hold-open valve in this manner had two distinct effects: (1) an open door would close automatically at a controlled rate when the solenoid valve circuit was interrupted, *e.g.*, by triggering of a smoke detector;[7] and (2) the continuing force of the solenoid on the valve made it possible for the door to have a multiple point hold-open feature. Because of the addition of the valve-solenoid structure, the Martin patent was the first device in the door closer art which had a multiple point hold open feature and which could be closed automatically.[8]

The Slaybaugh patent is similar in construction and operation to the Martin device in many respects. Like Martin, Slaybaugh employs a piston and a cooperating cylinder filled with hydraulic fluid. Like Martin, Slaybaugh also uses an electronically operated solenoid

[6] Martin was not the first patent to use a solenoid-operated control valve. Earlier patents, however, used the solenoid to assist fluid pressure in sealing the valve rather than to oppose the pressure. *See, e.g.*, Rice U.S. Patent No. 2,201,105; Koch U.S. Patent No. 1,884,957.

[7] The Martin patent was directed toward satisfying the industry's need for a door hold-open device which could close automatically if fire or smoke were detected.

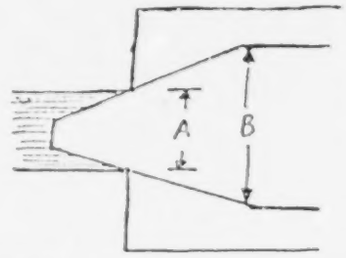
[8] As with prior door closers, the Martin device could also be closed manually, but the door had to be pushed or pulled continuously all the way toward closure.





hold-open valve apparatus. As a result, it too has the multiple point hold-open and automatic closing features. The distinctive and, in Republic's view, the innovative feature of the Slaybaugh device is the addition of momentary manual release to the door closer art.

Republic argues that Slaybaugh's contribution to the art—momentary manual release—was achieved by adding components to the Martin patent and by proportioning key elements. The crux of Slaybaugh's improvement over Martin and the principal difference which allows momentary manual release is the employment of a dual area valve. As illustrated in the diagram below, a dual area valve is constructed with a face area (B) which is larger than the area of its seat when the valve is closed (A).[9]




Once the valve is opened by the combined force of the closing spring and the momentary push, the fluid pressure acts on a larger face area than it did when the valve was closed. Since force is the product of pressure times area, the high pressure fluid acting on the entire projected valve face area, exposed when the valve is open, develops a force sufficient to overpower the opposing force exerted on the valve by the solenoid. Because the solenoid is overpowered, the valve stays open until the fluid escapes and the door closes by itself, without additional manual assistance.[10]

The Martin patent, however, is not the only pertinent prior art. Other patents, which Republic failed to disclose to the Patent Office, teach the concept of dual area valves.[11] Because Republic did not disclose these, the presumption of validity does not obtain for the Slaybaugh patent against this evidence of prior art. *The Allen Group, Inc. v. NuStar, Inc., supra*; *Rapat Corp. v. McGraw Edison Co., supra*.[12]

[9] This diagram is, of course, but a two-dimensional representation of the conical structure in the Slaybaugh device.

[10] The principle of dual area valves is illustrated by the following example: If the area of the valve seat (A) is 0.5 square inch and a force (exerted by a solenoid, for example) of 250 pounds is sufficient to keep the valve closed, the valve will crack open when the hydraulic pressure exceeds 500 pounds per square inch (PSI) since 500 PSI times 0.5 square inch equal 250 pounds of force. Once the valve has cracked open, however, the 500 PSI fluid is exposed to the larger area of the valve face (B), 1.0 square inch, for example. 500 PSI times 1.00 square inch equal 500 pounds of force then holding the valve open (an amount far in excess of the 250 pound force attempting to close the valve). Accordingly, fluid flows out of the valve seat past the valve until the hydraulic pressure drops from 500 PSI to 250 PSI. Until that time the valve remains open, allowing the fluid to escape and thereby closing the door.

[11] *See, e.g.*, Prpatel et al., U.S. Patent No. 2,980,132; Parker, U.S. Patent No. 2,841,760; Hubbard, U.S. Patent No. 3,117,321.

[12] Republic argues that Martin, in using a ball valve, also had a dual area valve construction. As a result, Republic contends that the Martin patent is more pertinent prior art than Prpatel, et al., because Martin is in the door holder closer art. In effect, Republic argues that Martin contains the same dual area valve construction and function that Prpatel, et al. did.

The fact is that most valves do have larger valve face areas than valve seat areas. But such valves, including the ball valve employed by Martin, do not *coincidentally* proportion the valve seat area, the valve face area, and the valve biasing force. The Martin patent simply does not teach such a valve intentionally proportioned to open at a predetermined high pressure and then stay open to permit final escape until the pressure effect on the valve face drops to a predetermined lower pressure.

[13] *See* note 31 *supra*.

[14] Republic argues that the prior art dual area valves are "design" valves, while the valve used in the Slaybaugh device is not. Although certain prior art valves were used as drain valves, *see, e.g.*, Hubbard, others were not designed merely to dump all the fluid out of a chamber but rather to accept fluid flowing out of a chamber until the pressure in the chamber dropped below a predetermined level. *See, e.g.*, Prpatel, et al., Parker.

[15] During the prosecution of the patent, the Patent Office cited several patents for their valve disclosures. Six patents cited in note 26 *supra*. None of these patents are in the door closer art. Interestingly, Slaybaugh did not argue that these patents were nonanalogous. Rather Slaybaugh argued that the valves were not the same because they did not appear that pressure from the surface of the valve seat and did not have area relationships wherein they would open at a predetermined high pressure and, subsequently, remain open when that pressure dropped to a predetermined lower pressure.

would be obvious to a layman. *Id.* at 229. *See also Graham, supra*, 383 U.S. at 327. And obviousness is measured not by considering what was obvious to actual artisans but by considering whether a hypothetical person, having all of the prior art at hand, would have found the same solution when addressing himself to the same problem. *Popeil Brothers, Inc. v. Schick Electric, Inc.*, 494 F.2d 162, 167 (7th Cir. 1974); *see Systematic Tool & Machine Co. v. Walter Kidde & Co., Inc.*, 555 F.2d 342, 348 n.8 (3d Cir.), *cert. denied*, 434 U.S. 857 (1977); *Malsbary Manufacturing Co. v. Ald, Inc.*, 447 F.2d 809, 813 (7th Cir. 1971) (Stevens, J., dissenting). The district court found, and we agree, that such a hypothetical person in the door closer art would have knowledge of basic hydraulics. This knowledge would have included safety and pressure relief valves which teach use of the dual area concept to keep a valve open after the initial pressure is reduced.[8]

Even with this awareness, Republic argues that Slaybaugh advanced the art because of his proportioning of the force of the main spring, the valve seat area, the projected valve face area, and the counterforce of the solenoid. This, however, amounted to little more than the mathematical task of filling in the variables of a given equation. We find this proportioning simply to be "the work of a skillful mechanic, not that of the inventor." *Hotchkiss v. Greenwood*, 52 U.S. (11 How.) 248, 267 (1851).

Republic strenuously argues that we should weigh such secondary considerations as commercial success, long felt need, and failure of others. *See Graham, supra*, 383 U.S. at 17-18. Even assuming the presence of these factors in this case—of which we have some doubt—we decline this invitation. While such secondary considerations may be "indicia of obviousness or nonobviousness," *id.* at 18, "these matters without invention will not make patentability." *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 60 (1969). Only in a close case, in which application of the primary criteria of nonobviousness under section 103 does not produce a firm conclusion, can these secondary considerations be used to "tip the scales in favor of patentability." *Vandenberg Corp. v. Burndy Corp.*, 517 F.2d 535, 541 (7th Cir.), *cert. denied*, 423 U.S. 987 (1975). Because we hold that the claims made here are clearly obvious under section 103, we deem it unnecessary to examine these secondary considerations.

The judgment of the district court is affirmed.

A true Copy:

Teste:

*Clerk of the United States Court of Appeals for the Seventh Circuit*

[8] Slaybaugh himself admitted in a deposition that he was familiar with relief valves of the type disclosed by Prigatel, et al. Defendant's Trial Exhibit No. 38 at 153.

-- End of Section D --



# United States Court of Appeals

## FOR THE EIGHTH CIRCUIT

No. 78-1341
No. 78-1301

| | | |
|---|---|---|
| Reinke Manufacturing Company, Inc., | * | |
| Appellant-Cross-Appellee, | * | Appeal from the United States District Court for the District of Nebraska |
| v. | * | |
| Sidney Manufacturing Corporation, | * | |
| Appellee-Cross-Appellant. | * | |

Submitted: November 15, 1978
Filed: February 26, 1979

Before STEPHENSON, HENLEY and McMILLIAN, Circuit Judges.

STEPHENSON, Circuit Judge.

This case involves two patents, No. 3608826 ('826) and No. 3750953 ('953), on a circular irrigation system known as the Electrogator. Plaintiff-appellant Reinke Manufacturing Company, the assignee of the patents, primarily appeals from the trial court's[1] determination that the patents are invalid for reasons of obviousness. Defendant-appellee Sidney Manufacturing Corporation, the alleged infringor of the patents, primarily cross-appeals from the trial court's determination

[1] The Honorable Robert F. Denney, United States District Judge for the District of Nebraska.

that, if the patents are valid, Sidney infringed the claims of the patents in question.[2]

Because we affirm the district court's finding that the patents are invalid for reasons of obviousness under 35 U.S.C. § 103,[3] it is not necessary to consider the issue of infringement. There can be no infringement of an invalid patent. Greening Nursery Co. v. J & R Tool & Mfg. Co., 376 F.2d 738, 742 (8th Cir. 1967).

The Supreme Court set out the section 103 standard in Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966):

> While the ultimate question of patent validity is one of law, * * * the § 103 condition, which is but one of three conditions, each of which must be satisfied,[4] lends itself to several basic factual inquiries. Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy. * * *
>
> This is not to say, however, that there will not be difficulties in applying the nonobviousness test. What is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context. The difficulties, however, are comparable to those encountered daily by the courts in such frames of reference as negligence and scienter, and should be amenable to a case-by-case development. We believe that strict observance of the requirements laid down here will result in that uniformity and definiteness which Congress called for in the 1952 Act.

While a presumption of validity is accorded to patents that have "survived the scrutiny of the Patent Office," Woodstream Corp. v. Herter's, Inc., 446 F.2d 1143, 1149 (8th Cir. 1971), and while the primary responsibility for initially making determinations inherent in approving patents lies with the Patent Office, the reviewing court has the responsibility of applying the strict and invariable standard of section 103 as mandated by the Supreme Court in Graham v. John Deere Co., supra, 383 U.S. at 17-19.

In applying section 103, it is important to keep in mind that the test is not whether the object is an improvement in the art; it is not whether the object works better; "an improvement which is obvious to those skilled in the art is not entitled to protection." Airlite Plastics Co. v. Plastilite Corp., 526 F.2d 1078, 1082 (8th Cir. 1975), cert. denied, 425 U.S. 938 (1976).

The district court's factual discussion of the Reinke

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[2] Sidney also raises several other issues, but in light of our holding, a discussion of those is not necessary.

[3] 35 U.S.C. § 103 provides:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

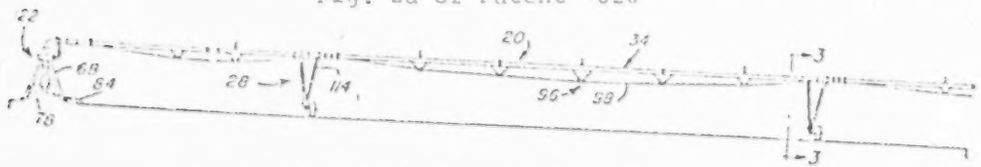
[4] In addition to being nonobvious, an invention must also be useful and novel in order to be patentable. 35 U.S.C. §§ 102, 103; Clark Equip. Co. v. Keller, 570 F.2d 778, 785 (8th Cir. 1978), cert. denied, 47 U.S.L.W. 3222 (Oct. 3, 1978, No. 77-1640).

patents provides an excellent understanding of the subject matter:

> The subject of the Reinke patents is an electrically driven circular irrigation system in which the water pipe carrying sprinkler heads serves as part of a traveling sectional boom. One end of the boom is connected to a stand assembly positioned in the center of a square area to be irrigated. The boom moves in a circular path around the stand assembly. Such machines are generally known as center pivot irrigation systems, because the boom carrying the sprinkler heads travels around the central stand or pivot location containing the water supply pipe.
>
> In the Reinke patents, the boom is propelled in a circular path by electrically driven wheeled towers, i.e., "drive units," spaced at intervals. The wheel assemblies also provide support so that the boom is maintained in a straight line as it rotates. The boom itself consists of the water pipe and a supporting truss assembly underneath and interconnected with the water pipe.
>
> Generally, the truss is constructed as follows[:] * * * The water pipe forms the top chord of the truss, and the bottom or tension chord is formed by cables or tie rods. On either side of the water pipe, brace chords in the shape of a "V," attached to the pipe at the upper ends of the V, extend downward with the apex of each V connected to a bottom or tension chord. The V braces form the web members of the truss. A transversely extending brace, or connector bar, is attached to the apices of the V's at the points where the apices are fixed to the bottom or tension chords.

Reinke Mfg. Co. v. Sidney Mfg. Corp., 446 F. Supp. 1056, 1060 (D. Neb. 1978).

Fig. 2a of Patent '826

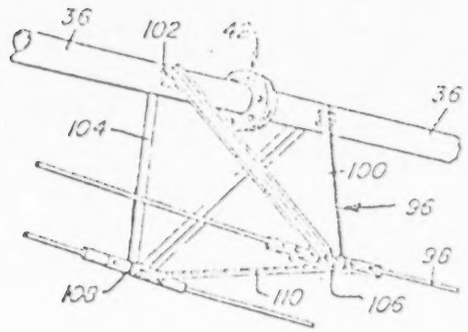



Side Sketch of Electrogator





Fig. 14 of Patent '826




Close-up Sketch of Truss Section of Electrogator

The dispute in this case centers around claims 4 and 11 of the '826 patent, and claims 1, 3, 4 and 5 of the '953 patent,[5] which primarily describe the truss which supports the water pipe and the attaching devices used in conjunction with the truss.

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[5]The claims provide in pertinent part:

The '826 patent:

> 4. An irrigation apparatus comprising an elongated pipe[,] * * * said elongated pipe including a truss structure disposed along the undersurface thereof between the wheeled means, said structure including a plurality of pairs of V-shaped braces having the upper ends connected to the pipe in longitudinally spaced relation with the braces in each pair depending downwardly in converging relation to each other and in diverging relation to the braces in an opposed pair, means interconnecting the apices of the pairs of braces to retain them rigidly in spaced-apart relation, and tension rods connected longitudinally of the apices of the braces along each side of the pipe with the ends thereof being connected to the pipe at the end of each section thereof thereby rigidifying and supporting the pipe.
>
> 11. * * * that improvement comprising a

The district court stated the issue as follows:

Center pivot irrigation equipment is subject

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supporting truss structure for the pipe including a plurality of longitudinally spaced brace assemblies fixed to said pipe and depending therefrom, each brace assembly including a pair of opposed brace members of V-shaped configuration having the upper ends thereof attached to the pipe and depending in diverging relation, means retaining the lower apices of opposed pairs of brace members in spaced relation, and tension members connected to the apices of said brace members and extending and attached to the pipe at remote points for rigidifying the pipe and forming a truss support therefor.

The '953 patent:

1. * * * that improvement comprising a supporting truss structure for the pipe including a plurality of longitudinally spaced brace assemblies fixed to said pipe and depending therefrom, each brace assembly including a pair of opposed brace members of V-shaped configuration having the upper ends thereof attached to the pipe and depending in diverging relation, means retaining the lower apices of opposed pairs of brace members in spaced relation, and tension members connected to the apices of the brace members and extending and attached to the pipe at remote points for rigidifying the pipe and forming a truss support therefor, said pipe being sectional with the sections being joined by abutting end flanges, said tension members being attached to the pipe by extending through and being secured to a pair of abutting flanges.

3. * * * that improvement comprising a supporting truss structure for the pipe including a plurality of longitudinally spaced brace assemblies fixed to said pipe and depending therefrom, each brace assembly including a pair of opposed brace members of V-shaped configuration having the upper ends thereof attached to the pipe and depending in diverging relation, means retaining the lower apices of opposed pairs of brace members in spaced relation, and tension members connected to the apices of the brace members and extending and attached to the pipe at remote points for rigidifying the pipe and





to a variety of loads and stresses, such as the weight of its own structure, natural forces such as wind, stresses arising from the dynamics of travel over rough terrain, uneven loads as water passes through the pipe. All such machines, therefore, must include features to maintain the pipe in alignment and avoid breakage or collapse of the pipe spans and drive units.

Mr. Reinke asserts * * * that his truss structure prevents or withstands "wallowing" or "whipping" under such stresses by the "manner in which the braces and pipe are arranged and interconnected with each other and the tying rods [which] produces an interaction which rigidifies the assembly." Defendant contends that even if the Reinke V-brace configuration withstands loads and stresses more effectively than truss structures previously used on pivot sprinklers, the Reinke trussed pipe represents an obvious extension of the prior art.

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forming a truss support therefor, the upper ends of the brace members being secured to angular clips rigidly affixed to the exterior surface of the pipe.

4. * * * a supporting truss structure for the pipe including a plurality of longitudinally spaced brace assemblies fixed to said pipe and depending therefrom, each brace assembly including a pair of opposed brace members having the upper ends thereof attached to the pipe and depending in diverging relation, means retaining the lower ends of opposed pairs of brace members in spaced relation, and tension members connected to the lower ends of the brace members and extending and attached to the pipe at remote points for rigidifying the pipe and forming a truss support therefor, the upper ends of the brace members being secured to clips rigidly affixed to the exterior surface of the pipe, said tension members being attached to the pipe by being secured to flanges on the pipe.

5. The structure as defined in claim 4 wherein said pipe is sectional with the sections being joined by abutting end flanges, said tension members extending through and being secured to a pair of abutting end flanges, each of said opposed brace members including two depending members defining a substantially V-shaped configuration having their lower end portions connected with each other and the tension members being connected with the lower end portions of the brace members.

Reinke Mfg. Co. v. Sidney Mfg. Corp., supra, 446 F. Supp. at 1068 (footnote omitted).

As the district court noted, the patents in question are combination patents and "[c]ourts should scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements. . . . A patent for a combination which only unites old elements with no change in their respective functions . . . obviously withdraws what already is known into the field of its monopoly and diminishes the resources available to skillful men . . . ." Sakraida v. Ag Pro, Inc., 425 U.S. 273, 281 (1976), quoting from Great A. & P. Tea Co. v. Supermarket Equip. Corp., 340 U.S. 147, 152-53 (1950). Thus, if the claims cover a structure that combines old and well known elements, one of the factors this court must look for in determining whether the patents meet section 103 requirements is synergism: that which results "in an effect greater than the sum of the several effects taken separately." Anderson's-Black Rock, Inc. v. Pavement Salvage Co., 396 U.S. 57, 61 (1969).

In our examination we will not only consider whether it was obvious that by putting together the various elements used the result would be the effect achieved in the Electrogator; we will also consider whether the effect is a new effect, or simply each of the items performing its expected function.

As directed by Graham, we shall examine the prior art, the differences between the prior art and the claims in issue, and the level of ordinary skill in the art.

A. Prior Art

Initially we note that principles of truss design are





long known to the structural arts of bridge, roof and related designs. A truss is essentially a structure consisting of straight pieces joined to form a series of triangles in a single plane. Continuous triangles may also be built into more than one plane, in which case the truss will have stability in each plane in which triangular support is found.

"Shear" consists of forces acting along a planar surface. If the shear load is more than the material can stand, it will fracture along the plane where the shear load is too great. Under tension, molecules spread or expand. Under compression, they compress. In a truss, members of the triangle resist by tension the tendency of other members to compress, and vice versa.

In general, the truss is based upon the geometric principle that the shape of a triangle cannot be deformed without altering the length of its sides, i.e., the sides of a triangle cannot move with respect to each other. The web members of a truss, the diagonal and vertical elements, assuming adequate connection features, maintain stability between the horizontal upper and lower chords of the truss. Therefore, as the triangle is the most stable planar configuration, the more planes into which triangulation is introduced, the greater the stability of the structure.[6]

Reinke Mfg. Co. v. Sidney Mfg. Corp., supra, 446 F. Supp. at 1070. Further, the connecting device is described by the claims in dispute, i.e., the angle clips connecting the V-braces to the waterpipe and the method of connecting the ends of the tie rods,[7] are not new connecting devices or methods; all were known as part of the art prior to construction of the Electrogator.

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[6]There was sufficient evidence to support the conclusion that "trusses" are obvious. There was testimony from two expert witnesses concerning principles of truss construction and there was evidence of the use of truss structures in other similar irrigation systems and in bridge construction.

[7]This consisted of extending the ends of the tie rods

Sidney relies upon (1) the "Raincat" system; (2) the "Modified Mel Brown" system; (3) the Wallace U.S. Patent No. 3,335,958; (4) the Allwood Australian Patent No. 227737; and (5) the illustrations in the Swiss Klasse Patent No. 201557 as evidence of prior art pertaining to the mechanical function of the irrigation system.

The Raincat is a pivot irrigation system with the waterpipe supported underneath by a simple truss design of triangular braces in vertical planes transverse to the pipe. The lower corners of the braces are connected by longitudinal tie members extending between the corners and up to the pipe.

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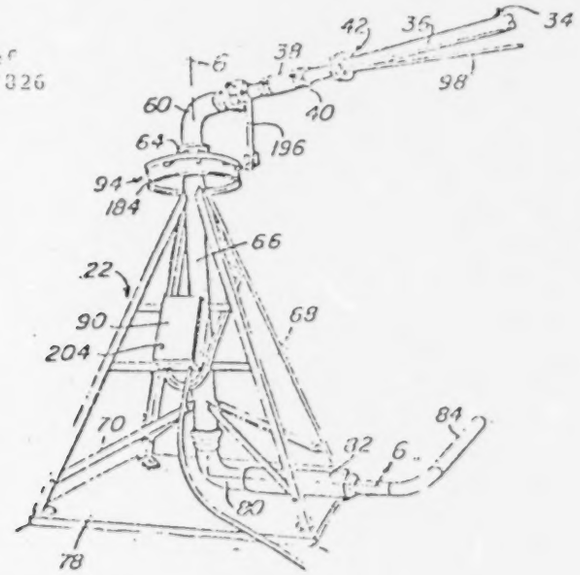
through holes in the pipe coupling flanges at the end of the boom section.

Fig. 5 of Patent '826

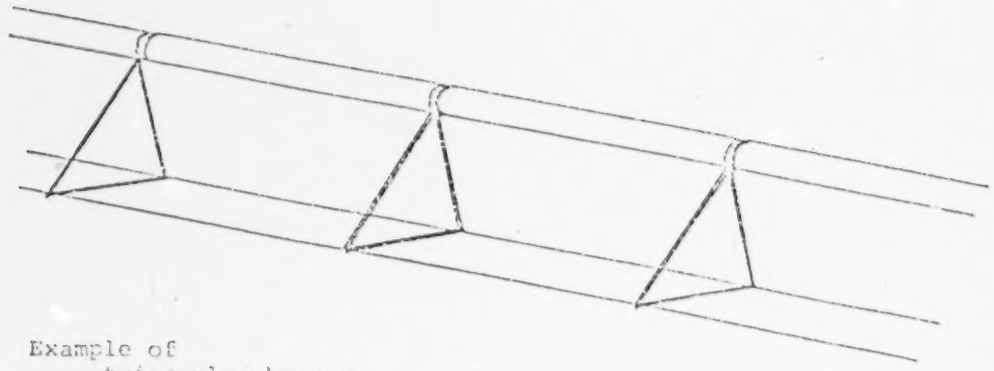



See picture in text, p. 5, Figure 14, #102 for an example of the angle clip.





There is a 90-foot span between the drive units.



Example of triangular braces

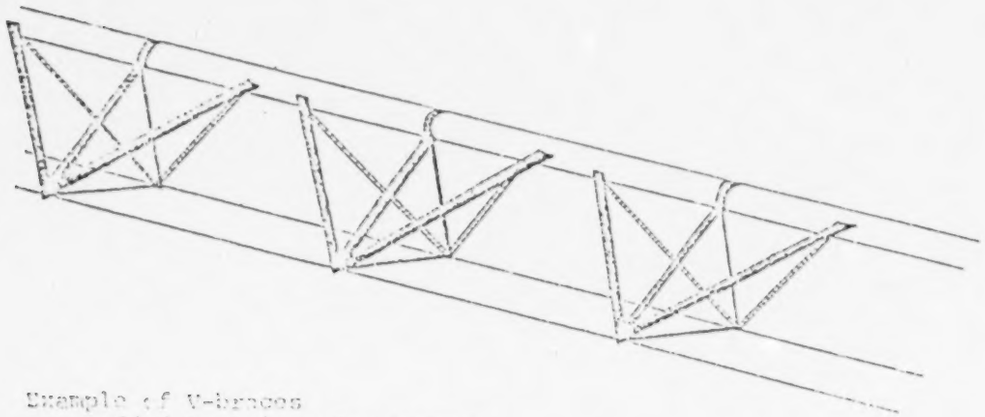
Although the Raincat was built somewhat differently over a period of years, there was testimony that indicated that the arms of the triangles in the truss system were either attached to the waterpipe with clamps that were fastened around the machine or fastened to the flange that hooked together the pipe spans. In subsequent machines, the arms of the braces were welded to lugs.

At the beginning of production of the Raincats, the tie rods were fastened to the pipe with U-bolts.

The Modified Mel Brown--in essence, a modified Raincat--came about as a result of experimentation with the Raincat. Because the U-bolts connecting the tie rods slipped on the original design, the arm of the machine would go into an S-curve and consequently bend the waterpipe.

The first step toward correcting this problem was to

put a V-brace at the center triangular brace, in order to keep the waterpipe and the tension rods from going in different directions (causing the S-curve).



Example of V-braces
added to triangular braces

The V-brace, depending upon the movement of the pipe and tension rods, will go into either tension or compression.

Later still, the V-braces were eliminated when the U-bolts were changed; the tension rods were instead welded together at a common point onto the pipe, solving the S-curve problem in a different manner.[8]

[8]One of Reinke's contentions on appeal is that the evidence was insufficient to establish the Modified Mel Brown as prior art. We hold the evidence was sufficient; Mel Brown testified that he had built at least two of the modified structures and that they were shipped out to be used by customers. There was corroborating evidence of a drawing reflecting the modified design, which was initialed by Mel Brown and dated March 26, 1963. The Reinke Patents are dated 1971 and 1973. Although Brown did admit that the structure as built



The Wallace U.S. Patent No. 3335958 and the Allwood Australian Patent No. 227737 are irrigation systems similar to the Raincat and the Electrogator. The Swiss Patent No. 201557 discloses the truss structure of what was referred to in testimony as a bridge. It was admitted as evidence by the district court but limited to the illustrations; the text is not translated into English.

Thus the scope and content of the prior art as shown at trial is, at its most refined point, generally included in the Raincat and Modified Mel Brown systems.

B. The Differences Between the Prior Art and the Claims in Issue

Reinke's primary argument is that none of the prior art discloses an arrangement in which the pipe between each pair of drive units is rigidified laterally, vertically, and torsionally by joining it with a plurality of assemblies of opposed braces of V-shape so arranged from one another and interconnected by the tie rods as in the Electrogator.

It is true that the Allwood, Raincat and Modified Mel Brown units all have vertical supports--the Electrogator does not. However, the Modified Mel Brown, in addition to the vertical supports, also has V-shaped braces similar to those on the Electrogator. In addition, truss design in general makes use of triangular braces in different planes in order to provide the support strength for which trusses are used.

was somewhat different than the drawing, the differences were minor. The primary modification, the added V-brace, was reflected in the drawing and Brown testified that the change was made to the two structures on which he worked.

Reinke still contends that the effect of its invention was to achieve a self-propelled irrigation system with a span between drive units in excess of 90 feet (120 feet) with the same attributes of strength, alignment and economy as the previously marketed irrigation systems with only 90-foot spans between drive units. Reinke partially attributes this to the connecting devices used in the Electrogator. The connecting devices for the truss support and the tie rods were different[9] in the Electrogator from prior art insofar as irrigation

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[9]We note that Mr. Reinke did not attribute a great deal of importance to this at trial:

> Q. [Mr. Thomte] I believe, Mr. Reinke, that you testified that the location of the openings in the flanges for the tie rods, were, I think in using your words, located at a very critical or strategic place. Would you elaborate on that, please?
>
> A. [Mr. Reinke] They are located in the flange about one-third from the bottom because that is the most economical way to do it that I know of and as another pipe is attached to it, which there always is in this system, you have two flanges to go through, and that makes the cheapest, the most economical, the strongest way to attach the end tie rod.
>
> Q. Could the tie rod be attached at the upper portion of the flange or at the bottom of the flange?
>
> A. It could be.
>
> Q. It wouldn't matter really where you attach it?
>
> A. It would matter; it would make a difference, but not a significant difference.
>
> Q. No significant difference where it is attached?
>
> A. Well, I wouldn't make it that broad.
>
> Q. I think that is just what you said, Mr. Reinke, that there wouldn't be any significant difference?
>
> A. What I am saying is that it is located at the most ideal location, one third up.



systems are concerned. Because Reinke alleges that the combined effect of all of the elements was new--new in that it created an effect heretofore undiscovered which enabled the span distance between drive units to be increased to 120 feet--Reinke contends that this complies with the concept of synergism.

We do not agree that this is synergism.

> When the resulting new combination produces a totally new functional aspect, to deny patentability in every case would be to sanction the use of "hindsight" in light of the claimed patent. However, at the same time, to deny patentability where the combination of elements is an obvious step, where no inherent difficulties or deterrents are involved in making the step, where the new combination results in a natural phenomenon, even though all of the advantages were not foreseen, should not bring into play the introspective condemnation of using "hindsight." The test of obviousness, again, must turn upon a case by case analysis.

National Connector Corp. v. Malco Mfg. Co., 392 F.2d 766, 771 (8th Cir.), cert. denied, 393 U.S. 923 (1968).

Thus, the difference here, even when considered most favorably to Reinke, must be confined to the fact that Reinke used a better and different truss design than had been used before in irrigation systems; Reinke used better and different connecting devices than had been used before in irrigation systems; and Reinke achieved a longer span between drive units--without compromising other qualities--than had been achieved before in irrigation systems.

C. Level of Ordinary Skill in the Art

Testimony at the trial indicated that a person of ordinary skill in the structural arts in 1967 would have been a

person "with somewhat more than elementary skills in and knowledge of the structural engineering arts who was conversant with irrigation equipment. Such person would have been aware of basic principles of truss design." Reinke Mfg. Co. v. Sidney Mfg. Corp., supra, 446 F. Supp. at 1070.

The question that must be resolved is whether this hypothetical person of ordinary skill in the art could have created the Electrogator with the differences as noted in Part B, supra. If such an ordinary person could have achieved the advancements discussed, the Electrogator is not a patentable invention as anticipated by section 103.

As we stated in University of Ill. Foundation v. Winegard Co., 402 F.2d 125, 127 (8th Cir. 1968), cert. denied, 394 U.S. 917 (1969), quoting Atlantic Works v. Brady, 107 U.S. 192, 199-200 (1882):

> The process of development in manufactures creates a constant demand for new appliances, which the skill of ordinary head-workmen and engineers is generally adequate to devise, and which, indeed, are the natural and proper outgrowth of such development. Each step forward prepares the way for the next, and each is usually taken by spontaneous trials and attempts in a hundred different places. To grant to a single party a monopoly of every slight advance made, except where the exercise of invention, somewhat above ordinary mechanical or engineering skill, is distinctly shown, is unjust in principle and injurious in its consequences.[10]

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[10] For example, as the Supreme Court stated in Busell Trimmer Co. v. Stevens, 137 U.S. 423 (1890):

> The most that can be said of [the patent before us] is that it shows * * * great industry in acquiring a thorough knowledge of what others had done in the attempt to trim shoe soles in a rapid and improved mode, by the various devices perfected





As we stated before, the truss design in the Electrogator appears to be a better truss design than the Modified Mel Brown; the angle clip appears to be a better connecting device; and the attachment of the tension rods to the pipe in the Electrogator design appears to be a better way of connecting them. Because of these improvements, the span between the Electrogator drive units can be greater while still maintaining all other desirable features. Yet, the improvements and the results achieved by those improvements are no more than those which a "hypothetical person skilled in the art, who has thought about the subject matter of the patent invention in the light of that art" could have accomplished. Flower City Architectural Metals v. Alpana Aluminum Prod., Inc., 454 F.2d 98, 108 (8th Cir. 1972).[11]

There is substantial evidence to support the trial court's

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> by patents for that purpose, good judgment in selecting and combining the best of them, with no little mechanical skill in their application; but it presents no discoverable trace of the exercise of original thought.

Busell Trimmer Co. v. Stevens, supra, 137 U.S. at 435, quoted in University of Ill. Foundation v. Winegard Co., 402 F.2d 125, 127 n.4 (8th Cir. 1968), cert. denied, 394 U.S. 917 (1969).

[11] Reinke argues that the testimony of the fabrication manager for Layne & Bowler (manufacturer of the Raincat), Mr. Walker, is in direct conflict with the trial court's finding of obviousness. Walker's testimony indicated that Layne & Bowler experimented with various truss designs in order to achieve a 120-foot span while still keeping other desirable features. Under the mandate of Graham, this "failure of others" is certainly a factor which may be considered as indicia of obviousness, Graham v. John Deere Co., supra, 383 U.S. at 17-18. "But where, as here, the facts establish convincingly that the invention was obvious against the background of the relevant prior art, [this] cannot be controlling." Cummins Engine Co. v. General Motors Corp., 299 F. Supp. 59, 89 (D. Md. 1969), aff'd, 424 F.2d 1368 (4th Cir. 1970), quoted in Hadfield v. Ryan Equip. Co., 456 F.2d 1218, 1221 (8th Cir. 1972).

finding that the '826 and '953 patent claims in issue are invalid for reasons of obviousness. It is therefore unnecessary to reach the issue of infringement. We affirm.

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TENTH CIRCUIT

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United States Court of Appeals
Tenth Circuit
MAR 9 1979
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Nos. 77-1561 and 77-1562

| | | |
|---|---|---|
| DEERE & COMPANY, | ) | |
| | ) | |
| Plaintiff-Appellee and Cross-Appellant, | ) | Appeal from the United States District Court for the District of Utah, Central Division (D.C. No. C 299-73) |
| | ) | |
| v. | ) | |
| | ) | |
| HESSTON CORPORATION, | ) | |
| | ) | |
| Defendant-Appellant and Cross-Appellee. | ) | |

Dugald S. McDougall, Chicago, Illinois (Dennis McCarthy and Rand L. Cook, Salt Lake City, Utah, and Theodore R. Scott, Chicago, Illinois, on the brief), for Plaintiff-Appellee and Cross-Appellant.

Gordon D. Schmidt of Schmidt, Johnson, Hovey & Williams, Kansas City, Missouri, for Defendant-Appellant and Cross-Appellee.

Before HOLLOWAY and DOYLE, Circuit Judges, and STANLEY,* Senior District Judge.

DOYLE, Circuit Judge.

* Of the District of Kansas, sitting by designation.

I.

THE PLEADINGS AND PROCEEDINGS

Plaintiff-appellee Deere & Company instituted this action in the United States District Court for the District of Utah. A declaratory judgment to declare certain patents invalid was prayed for against the Hesston Corporation of Hesston, Kansas, the owner of United States Patent No. 3,556,327, entitled "Loose Hay Wagon," issued January 19, 1971, and filed by Harold Keith Garrison April 14, 1969; also, United States Patent No. 3,728,849, entitled "Hay Loader," issued April 24, 1973, on application filed November 14, 1969, by Ezra Cordell Lundahl.

From further allegations in the complaint it appears that Deere has designed and built a hay wagon, has exhibited it and offered it for sale at meetings of farm implement dealers, and is now manufacturing and selling in competition with a hay wagon manufactured and sold by Hesston, named StakHand.

It is further alleged that Hesston notified Deere that it considered the Deere implement to have infringed on both the Garrison and Lundahl Patents. Deere maintains in furtherance of its complaint that the Hesston and Lundahl Patents are invalid and so not infringed; also, it maintains that the Garrison and Lundahl Patents were obtained through fraud on the Patent Office and that they are invalid because of the sale of a prototype of the hay loader in the Lundahl Patent.

The answer on behalf of the defendant-appellant denies the allegations as to the invalidity, fraud and prior sale of a prototype and contains a counterclaim alleging infringement.



A supplemental counterclaim lists a series of Hesston Patents. These include those mentioned above together with improvement patents.[1]

Plaintiff-appellee Deere has filed a reply to the fourth supplemental counterclaim as a result of which all matters are fully in issue.

This matter was tried to the court before United States District Judge Anderson, District of Utah, who ruled all eight patents of Hesston Corporation invalid under 35 U.S.C. § 102(b) and 35 U.S.C. § 103. The district court essentially ruled that the patents in issue were invalid for obviousness as provided in 35 U.S.C. § 103 and known to the public for more than one year before the patent application under § 102(b).

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1. The numbers, name and dates of issue are as follows:

| Number | Title | Patented |
|---|---|---|
| 3,556,327 | Loose Hay Wagon | January 19, 1971 |
| 3,728,849 | Hay Loader | April 24, 1973 |
| 3,757,687 | Press Mechanism for Stacking Implements | September 11, 1973 |
| 3,828,535 | Hay Loader | August 13, 1974 |
| 3,842,732 | Tailgate Control for Stackers | October 22, 1974 |
| 3,847,072 | Loose Hay Wagon | November 12, 1974 |
| 3,878,670 | Stack Forming Loader | April 22, 1975 |
| 3,899,966 | Machine for Loading, Stacking and Unloading Crops | August 19, 1975 |

The trial court said that the controversy centered around four patents: Lundahl Patent No. 3,728,849, a haystacking method; Lundahl Patent No. 3,828,535, a haystacking machine(Lundahl I Patent and Lundahl II Patent, respectively). The other two primarily involved are the Garrison Patent No. 3,556,327, a haystacking machine, and the Garrison Patent No. 3,847,072, a haystacking method (the Garrison I Patent and Garrison II Patent, respectively).

II.

HISTORY AND BACKGROUND

This controversy had its origins in 1960 and the years following.

The Lundahls, Cordell and Ezra, son and father respectively, were engaged in the manufacture of loose hay wagons. Cordell, the son, saw the need for a machine that would transform loose hay into closely packed haystacks which could either be left in the field or moved to a storage place.

Lundahl's first machine was a simple wagon which compressed the hay. It was loaded by a machine known as a Farmhand grapple fork or a Farmhand. This latter was pulled by a tractor through the hay field where it would pick up loose hay and deposit it into the wagon. This wagon had high side walls and a front panel which moved toward the rear and in so doing compacted the hay against the rear doors. Lundahl discovered that this mechanism loaded the hay unevenly and without a uniform density. The result was disintegratio of the hay stack. There were other deficiencies. The loading was



a separate function; there was a lack of integrated method of pulling the wagon down the windrow. The operation was in two separate steps, in other words. After the loading there followed the horizontal compaction which was also in stages. Each time some hay was loaded it had to be compressed and then more hay would be added and compressed until the wagon was filled. While producing one complete haystack, this process resulted in a stack which tended to separate and fall apart. To overcome this,Lundahl added vertical compression units consisting of two gate-like top presses which would be set as extensions of the side walls and would swing down from the top on hinges powered by hydraulic compressors. Notwithstanding this, though, the principal compression was the horizontal force created by compressing the crop against the back walls of the wagon.

In February 1966, Lundahl advertised in a farm journal a one-man automatic feeding system for long hay. While the advertisement said that the machine would stack and compress loose hay from the windrow into neat uniform stacks without any manual handling, at this time an integrated system had not been developed: The wagon still had to be loaded separately. One Warren DePuy purchased one of these incomplete machines. It lacked the attachment which would make the machine self-loading. This was promised at a later date. This is here referred to as the DePuy machine and it was put to use during the 1966 haying season and for part of the 1967 season, but had mechanical difficulties as a result of which DePuy sued the Lundahl Corporation for breach of warranty. After this the machine was abandoned by DePuy.

In 1966, the Hesston Corporation, defendant-appellant here, bought the assets of the Lundahl Corporation.[2] Hesston was very much interested in the stacking machine idea and pursued it through one of the engineers for Hesston, Keith Garrison, who worked with Cordell Lundahl on improving the design. Prior to this, Lundahl had come to the realization that vertical compaction was desirable. This led to the development of the swinging top-gates which came down on the loaded haywagon and also the addition of the tuckers to the undersides of the hinged gates on the earlier prototype. So the research was pursued along the line of developing the vertical compaction. Testing along this line continued through 1968 with several prototypes, including a 1966-67 prototype with redesigned top-presser gates integrated with a crop pick-up and distribution system. Eventually Garrison came up with a method of continuous loading of hay into a moving wagon by using the blower duct system with a dispersal mechanism which served to spread the hay evenly. Garrison also discarded the two-gate approach and adopted a single unit, described as an inverted U, which is used to apply downward pressure. These innovations were said to have produced "real good" results which yielded stacks of uniform density and having a self-supporting nature. Also, the stacks were better shaped from the standpoint of shedding water. This machine was ultimately marketed.

Hesston, in the year 1969, commenced the production of the StakHa 60, which made six ton stacks. Some smaller editions or models were

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2. A brief description of the Hesston Corporation is set forth in Appendix I.



added later, such as the StakHand 30, for forming three ton stacks, and the StakHand 10, which produced a one ton stack. Improved models were identified with an "A" after the number.

Deere and Company started selling machines which made one ton stacks, three ton stacks and six ton stacks, all of which appeared to be based on the same design as the Hesston machine. This activity produced the present controversy.

The application for patent on the Garrison I was filed in 1969. It matured January 19, 1971.

At the very outset the Garrison II Patent was rejected on the basis of prior art. The Patent Office ruled that Garrison II was the same as the Sutherland British Patent, the only difference being its blower conveyor. After this, Hesston offered an amendment claiming that it was not based on any prior art and saying that "it is absolutely new to provide a hay gathering or collection feature in a press as its initial function in cooperation with the main crop receiving body." The Patent was finally issued August 13, 1974.

The Lundahl Patents I and II suffered somewhat the same fate. Lundahl I was filed in 1969 and rejected in 1972. The rejection was based on the prior issuance of Garrison I. Lundahl, by swearing back, established that he had completed his invention prior to the date the Garrison I Patent was filed. The application was accepted and the patent matured in 1973.

The Lundahl II, which was also based on the Garrison I, was rejected by the examiner. Again, this objection was overcome by swearing back, but ultimately some but not all of the claims were allowed.

These four described patents, together with four so-called minor patents, were all ruled invalid, and basically these rulings are the issues for consideration on this appeal.

III.

THE JUDGMENT OF THE TRIAL COURT

Judge Anderson's opinion, which is published in 456 F. Supp. 520 (D. Utah 1977), constitutes thorough and careful workmanship, and in writing this opinion we have made full use of it. The opinion considers the following issues:

A. Fraud on the Patent Office.

   The contention of plaintiff-appellee Deere that fraud was perpetrated on the Patent Office.

B. The patentability of the Garrison, Lundahl and improvement patents. Included was the nonobviousness under § 103, and prior sale or use under § 102(b).

Essentially the contention of fraud perpetrated on the Patent Office is predicated on Hesston's failure to disclose in the application for the Garrison I and II Patents the prior art contained in the Lundahl prototype haystacking wagon which was merely mechanic improved by Lundahl originally, and also the failure to disclose in the Lundahl I and II proceedings the sale and development of the DePuy machine.



The trial court pointed out that under McCullough Tool Co. v. Well Surveys, Inc., 343 F.2d 381, 394 (10th Cir. 1965), Deere had the burden of establishing the obtaining of the four main patents by the use of fraud. Here the form of the fraud was nondisclosure and it would have to appear that the Patent Office would have rejected the Hesston application but for the fraudulent nondisclosure. See Norton v. Curtiss, 433 F.2d 779, 795 (C.C.P.A. 1970). The trial judge was not convinced that the Patent Office would have rejected the four major patents but for the nondisclosure, nor was the court able to conclude that there was any willful, intentional, wrongful or even reckless conduct in the failure to disclose. The court concluded as follows:

> Based on the present state of the record, the court concludes that the evidence is insufficient to impute to Hesston and its attorneys a fraudulent intent or gross and reckless conduct that would justify a finding of patent invalidity due to a purported fraud on the Patent Office. Hesston and its attorneys exercised good faith judgment on whether to include the prior Lundahl wagons as prior art in the Lundahl I, II and Garrison I, II patent applications. That good faith judgment, based on a strict notion of the scope of the intended patent in reference to the prior art, though erroneous, will not render the patent invalid. The court, therefore, denies Deere a declaratory judgment that the four major patents in issue are invalid due to Hesston's alleged fraud on the Patent Office.

On the question of invalidity of the patent as having been unpatentable under the prior art, the trial court reviewed the history of the particular provision noting that prior to the Patent Act of 1952, the requirements were that the device was to be "new and useful." Cited was Hotchkiss v. Greenwood, 52 U.S. (11 How.)

248 (1851), where the Supreme Court in defining the term "new" stated that "to be patentable a device must demonstrate 'skill and ingenuity' beyond that possessed by 'the skillful mechanic.'"

The 1952 Act, the court pointed out, reenacted the "new and useful" formula of patentability in the form of the terms novelty and utility in place of the requirement of the invention test by introducing nonobviousness.

The trial court concluded that the standards for determining patentability of the Hesston's Patents were, then, utility, novelty and nonobviousness. The court also concluded that Deere had not seriously challenged the patents as not having utility.

IV.

WHETHER THE DETERMINATION BY THE TRIAL COURT THAT THE PATENTS FAIL FOR OBVIOUSNESS IS SUPPORTED BY THE FACTS AND THE LAW OF THE CASE[3]

The trial court relied on the case of Graham v. John Deere Co., 383 U.S. 1 (1966). Obviousness under § 103, it was said in John Deere, is to be determined in the light of the prior art by studying the differences between the prior art and the claims at issue and by resolving the level of ordinary skill in the pertinent art. Against this background the obviousness or nonobviousness of the subject matter is determined. The Court, in John Deere, said that "Such secondary considerations as commercial success, long felt but

3. Appended to the opinion is a discussion of the operation of the Lundahl and Garrison machines. We hope that it will provide a better understanding of the functions of the patents in suit.



unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." 383 U.S. at 18-19. These could not, however, substitute for lack of invention.

In subsequent cases the Supreme Court has continued to apply the Graham test of patentability under § 103. The more important of the Supreme Court cases on the subject are Sakraida v. Ag Pro, Inc., 425 U.S. 273, 280 (1976), and Dann v. Johnston, 425 U.S. 219, 230 (1976).

The court then goes on to consider the Hale, Isom and Sutherland Patents cited as prior art by Deere. Hale dates back to 1887 and describes a hay-cocking machine, the main function of which was to gather hay or other fodder up from a field and discharge the fodder to the ground in compact piles or cocks for protection against storms. It sounds familiar. The Hale claims 1 through 4 state that the machine gathered the hay from the ground, elevated it into an open bin, provided distribution reciprocating back and forth over the open top together with a hinged bottom to drop the hay "cock" on the ground.

The Isom Patent, which is dated in July 1918, describes a mechanical hay shocker which, in combination, comprised a hopper, delivery means discharging into the hopper, tamping members within the hopper, a draper forming the bottom of the hopper and a facility for stopping the delivery means. The tamping member operated, the doors opened, and the draper started in motion.

The Sutherland Patent described a harvesting machine which provided an improved construction and a method

by which the hay can be compressed to form a stack and then deposited on the ground. This Sutherland Patent, dated in 1964, was t examiner's prior art reference for rejection of the Garrison II Patent application. This British patent was said by the trial court to clearly teach vertical compression of the hay to form a stack. Sutherland had a wheeled trailer attached to a tractor with a compression chamber mounted on the trailer into which hay could be "charged," the chamber being open at the top and having a rear wall which could be opened, and a hydraulically operated compression member by which the hay introduced into the chamber could be compressed so as to form a stack which could then be ejected from the chamber when the rear wall was opened.

A number of other prior art patents were cited, particularly the DePuy machine and the Lundahl prototype from which Garrison and Lundahl worked in order to perfect the vertical compression as well as pickup, elevation, even distribution, compaction and discharge.

McCullough Tool Co. v. Well Surveys, Inc., 343 F.2d 381, 393 (10th Cir. 1965), articulated a somewhat liberal test governing an aggregation of old parts so as to produce a patentable invention. The opinion said:

> The test of whether a particular patent is a mere aggregation and invalid or a combination and valid has been variously stated. Generally, where elements old in the art are united in such a way that a new and useful result is secured or an old result is attained in a more facile, economical and efficient manner, there is a patentable combination. Dewal, Inc. v. Minnesota Mining and Mfg. Co., 10 Cir., 292 F.2d 159; Oliver United Filters v. Silver, 10 Cir., 206 F.2d 658, cert. denied, 346 U.S. 923, 74 S.Ct. 308, 98 L.Ed. 416.

343 F.2d at 393.



It is noteworthy that this court also said, just prior to the above quote, that:

> It is universally held that a mere aggregation of a number of old parts or elements which, in the aggregation, perform or produce no new or different function or operation than previously performed or produced by them, is not a patentable invention. Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp., 340 U.S. 147, 71 S.Ct. 127, 95 L.Ed. 162; Admiral Corporation v. Zenith Radio Corp., 10 Cir., 296 F.2d 708; Consolidated Electro. Corp. v. Midwestern Instruments, 10 Cir. 260 F.2d 811.

343 F.2d at 393.

It would appear that the Supreme Court has recognized in Dann v. Johnston, 425 U.S. 219 (1976), that commercial success and failure of others may be relevant in determining obviousness or nonobviousnes However, the Supreme Court in Dann v. Johnston, supra; Sakraida v. Ag Pro, Inc., 425 U.S. 273 (1976); and Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp., 340 U.S. 147 (1950), also emphasized that commercial success without invention does not suffic In Sakraida, the invention, a system to flush cow manure from barn floors, was held to be obvious. In Dann v. Johnston, supra, a computer system which provided recordkeeping for bank checks and deposits coded into categories by the bank customer was not patentabl because it was obvious. The point was also made in Sakraida that in order for the combination of old elements to prevail, there must be a synergistic effect, that is, an effect greater than the sum of the several effects taken separately. The trial court was mindful of the Supreme Court's admonition in Great Atlantic & Pacific Tea Co. v. Supermarket Equipment Corp., supra, that courts should scrutinize a combination of patent claims with care proportioned to the difficulty

and improbability of finding an invention in an assembly of old elements. The patent is supposed to add to the sum of useful knowledge, the Supreme Court said, and patents are not to be sustained when their effect is to subtract from former resources freely available to skilled artisans. The trial court was cognizant of this in determining whether the differences were obvious to one reasonably skilled in the art, pointing out that one who makes such an invention is charged with awareness of the existing technology.

The trial court was not incorrect, as we view it, in its holding that the Hesston Patent[5] did not achieve a synergistic result that would be nonobvious to one reasonably skilled in the art. On the contrary, the court concluded that Hesston's Patents demonstrated the work of a skilled mechanic, the difference being that these patents do not achieve a nonobvious patentable difference from the prior art since they have combined old elements which continue to function as they did previously. The old elements do not in combination perform a new and different function even though the wagons did succeed in producing a striking result by combining the old elements.

In our view, the strongest point in Hesston's case rests in its contention that a new and different result, which realized great commercial success, flowed from the combination of the old elements and that this overcomes the argument that the result was invalid for obviousness. Nevertheless, we must disagree with Hesston's position. It is our conclusion, as indicated above, that the trial judge correctly appraised the prior art and the combination in the light of the commercial success of the patents.



The issue in question has given us pause and concern, but we are in a less favorable position than was the trial court in terms of making the present evaluations.

The other issues determined by the trial court, which we have described in detail, fraud on the Patent Office and prior sale or use under § 102(b), are supported by the evidence. Although we have examined them for possible plain error, none is perceived.

One further matter which we deem it necessary to consider is whether the trial court erred, as Deere contends, in denying the request for lawyers' fees. Here again, our disposition is to accept the finding and conclusion of the trial court, which was not convinced that this was an extraordinary case, whereby Deere would be entitled to fees. After all, Hesston was the patentee in this case and it surely had the right to litigate without being assessed Deere's attorneys' fees, in the absence of any extraordinary actions, like fraud, by Hesston.

The judgment of the district court is affirmed.

APPENDIX I

The Hesston Corporation, of Hesston, Kansas, is a rapidly growing corporation which primarily manufactures farming and industrial equipment. In the past ten years it has grown nearly tenfold. In fiscal 1966, Hesston reported net sales of $25,466,000, a net income of $1,148,000, and total assets of $13,440,000. In fiscal 1975, it reported net sales of $207,857,000, a net income of $9,572,000, and assets totaling $161,641,000. In the same period the number of persons it employed rose from an average of 1,050 to an average of 4,581.

By way of comparison, in fiscal 1975 Deere & Company reported net sales of $2,955,204,000, a net income of $179,073,000 and total assets listed at $2,440,829,000. At the close of 1975 Deere had 53,794 employees.

Both companies produce a wide range of products in general categories which include farm equipment, industrial equipment, and office and consumer products. Both operate in the United States and abroad. As an example of the level of diversity of these two corporations, Deere makes machines ranging from snowmobiles and lawn tractors to heavy duty graders, large tractors, and combines. Hesston also has a wide range of products. It makes, inter alia, back-hoes, waste disposal units (compactors, incinerators, etc.), snowblowers, harvestors, office furnishings, and of course, windrower and stack forming machines.

Hesston's largest division is farm equipment which, in 1975, accounted for 96% of Hesston's net sales. The hay stacking machines





here at issue fall into this category. The hay handling equipment product line, in 1975, produced 37% of Hesston's net sales. This 37% is a figure which rose from 16% in 1971. Hesston's second leading product line consists of windrowing machines, which, in 1975, accounted for 24% of Hesston's net sales.

Hesston is a corporation of global scope. It operates plants in France and Italy, has licensees in Australia, Argentina, and Brazil, and distributors throughout the world.

APPENDIX II

OPERATION OF THE LUNDAHL AND GARRISON MACHINES

The Lundahl Machine.

In this design, two parts, a loader and a compressing wagon, comprise the machine. The loader loads the hay from the windrow by a rotary pickup unit which has tynes or fingers rotating on a horizontal axis. This unit delivers the hay to an "endless" conveyor belt which elevates the crop. Neither aspect is particularl novel and the applicant notes this by providing that these elements may be powered in any suitable fashion.

The elevator unit consists of two parallel endless chains connected by cross slats. This unit inclines up toward the conveyor assembly which extends horizontally rearwards, from the elevator, and is located over the chamber in which the hay is to be dropped. An endless belt which runs up the elevator and over the conveyor actually carries the crop. At the back end of the conveyor is a roller which moves longitudinally back and forth and serves to disperse the hay to the front and rear of the chamber body.

The elevator/loader housing and the main body are connected in a pivotal fashion allowing the body to be shifted from side to side without shifting the loader. This allows the hay to be dispersed from side to side in the wagon as the wagon is shifted. (This pivotal mechanism also permits better operation over uneven terrain by allowing the unit to twist on a longitudinal axis so that while the loader cants go the left the body lists to the right, and vice versa.)





The compression is achieved by the swingable gates, and tuckers attached thereto, which are a part of the main body. In the loading stage each gate is set in an upward position, as an extension of the side of the body, and aids in channeling hay from the conveyor into the body.

In the compression stage, the gates swing in and down, compressing the hay towards the floor. The tuckers add pressure to the hay near the walls. The resulting stack is packed and rounded on the top thus having the desirable quality of readily shedding moisture.

In unloading, the loader/elevator housing and the main body can be separated. This allows the operator to tow only the body to the unloading area. Offloading is accomplished by tilting the body down so that the rear rests on or near the ground, opening the tail gate, and pushing the stack by means of the false front.

The Garrison Machine.

In this machine the loading component is again housed at the front of the body. The crop is picked up by a drum rotating on a horizontal axis. The drum has projecting tynes which actually pick up the crop. The hay is then delivered to another rotating drum, placed superjacent to the pickup drum, which has retractable fingers which carry the crop. This latter device delivers the hay into the path of a fan. The fan, housed in a duct, blows the hay upward. The hay, channeled by the duct housing, is directed up and then back into the wagon.

The loading system moves laterally back and forth at all times during the loading thus causing the crop to be dispersed from side to side in the wagon. At the outlet of the duct is a deflector plate which the operator may cause to swing up and down, as the blower swings back and forth, allowing the hay to be distributed to the front and back of the receiving body. These two oscillating elements are calculated to produce even distribution of the crop in the body.

The body has, as an integral part, a press. The press consists of a pitched roof (one that slopes down from both sides of the longitudinal center line), sides, and a rear wall which also functions as a gate. When the press is raised, the body and the press form a closed chamber into which the hay is blown. When the chamber is full, i.e., when the hay reaches the blower outlet near the top and front of the body, the loading is halted and the press activated. The press descends vertically upon the mass of hay. This process is repeated until the wagon is full of pressed hay.

When the stack is ready to be offloaded, the press does not have to be raised as both the back wall of the main chamber and the back wall of the press open as gates. The gates are raised and the body tilted so that the rear rests on or near the ground. The wagon is pulled forward and, at the same time, the stack pushed back and out. This last maneuver is achieved by means of a push bar which is located at or near the front of the wagon, near the base, and runs from one side to the other. The bar is attached to chains which run the length of the body and, when engaged, pull the bar towards the rear.





## DIAGRAMS OF THE LUNDAHL AND GARRISON MACHINES

Figures one and two portray the Lundahl machine in the compression stages. The view is from the rear. In figure one the side gates are swinging down to press the hay. In figure two the gates are down and the manner in which the "tuckers" compress the crop near the side walls of the wagon is shown.

Figures three and four are side depictions of the Garrison machine. In figure three the press is raised for loading. In figure four the press has been lowered to form the stack.

Figure five shows the Garrison machine from the rear, figure six the front. One can see, in figure five, the sloping characteristics of the press roof. In figure six the blower/elevator loading apparatus can be seen. The fashion in which the duct oscillates from side to side is also shown.

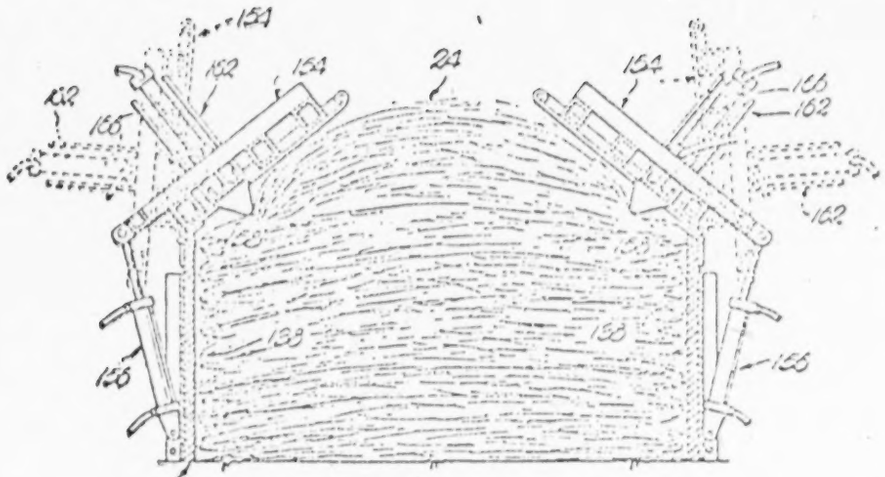

Fig. 1

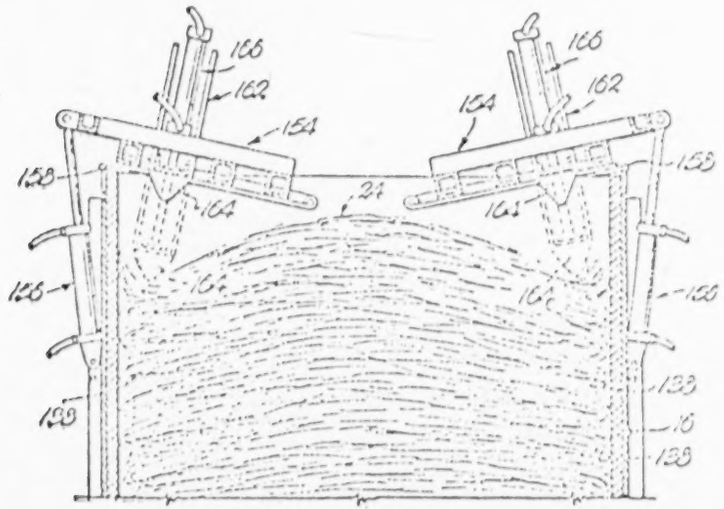

Fig. 2







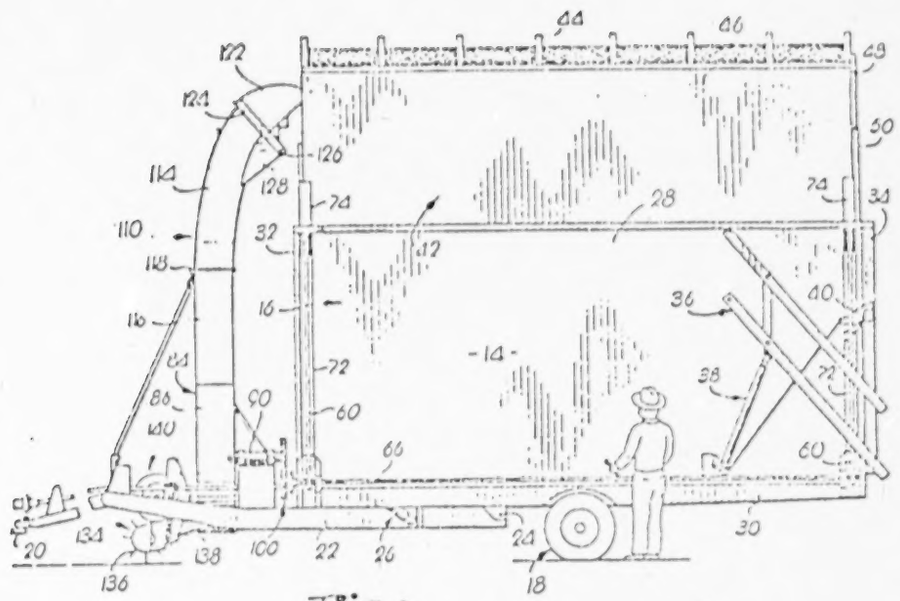

Fig. 3

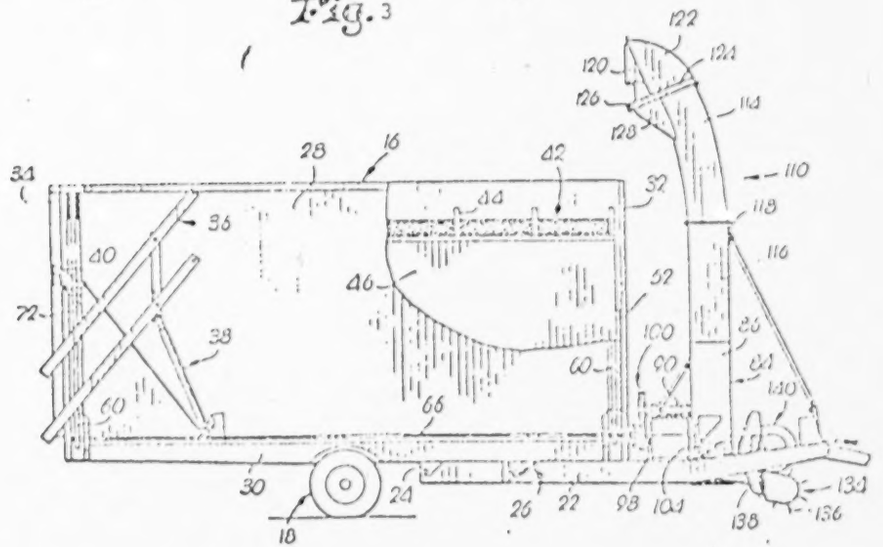

Fig. 4

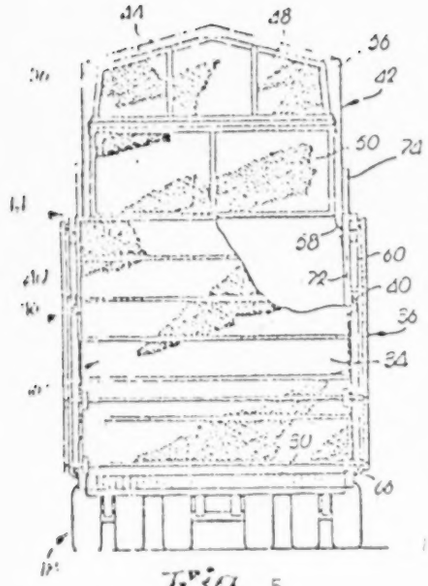

Fig. 5

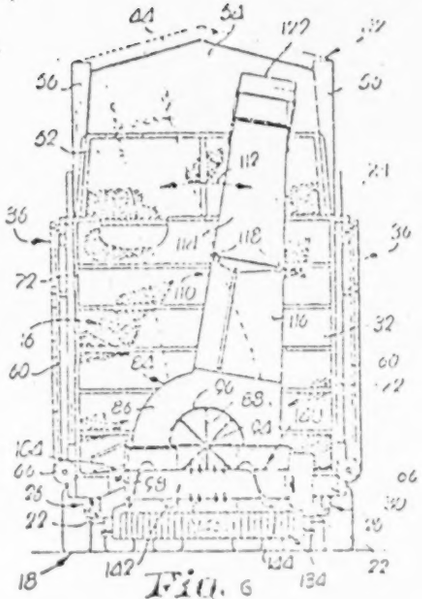

Fig. 6





PC PTCJ

# United States Court of Appeals

## For the Tenth Circuit

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SLIP OPINION